

portant chapter deals with "carrier" cases, and considerable stress is laid on this mode of the spread of infective diseases. The limitations to the value of isolation for the prevention of the spread of infectious diseases are critically discussed, and the conclusion is reached that isolation is of far less value than was formerly believed. Bacterial and protozoal diseases are both dealt with, and full references are given to the literature.

R. T. H.

CHEMISTRY FOR MATRICULATION.

- (1) *A Class-Book of Chemistry.* By G. C. Donington. Pp. xi+399. (London: Macmillan and Co., Ltd., 1911.) Price 3s. 6d.
- (2) *Chemistry for Matriculation.* By Dr. G. H. Bailey and H. W. Bausor. Pp. viii+548. (London: W. B. Clive, 1910.) Price 5s. 6d.

(1) **M**R. DONINGTON'S volume is a very interesting attempt to combine a practical course on modern lines with a descriptive text-book. The arrangement of the matter is distinctly original and has been carefully thought out. Discussion of more abstract topics, such as the atomic theory, Avogadro's hypothesis and valency, is postponed to a late stage in the book, while no chemical formula appears until p. 283. The preference thus given to a more descriptive treatment of the science is all to the good in an introductory class-book of this kind. In the early chapters the author deals very appropriately with the physical operations and physical properties which are used in the purification and characterisation of individual substances, such as solution, crystallisation, distillation, determination of melting points and boiling points, measurement of volume and density of gases. The first topics of a definitely chemical nature to which the reader is introduced are "acids and alkalis," "neutralisation," "rusting" and "burning," "active and inactive constituents of air," "elements and compounds." It must not be supposed that this descriptive treatment involves the suppression of the quantitative aspect of chemical changes. On the contrary, the author contrives in the earlier part of the volume to introduce the pupil by the way to the fundamental quantitative facts of chemistry.

While the general arrangement of the subject-matter is excellent, it may be doubted whether the author attains his object of providing a basis for teaching by research methods. With this in view, each topic is, as far as possible, introduced by the suggestion of experiments to be carried out by the pupil, these leading up to the solution of various problems. The paragraphs, however, in which appropriate experiments are indicated are followed by an authoritative description of all the facts bearing on the question. Various experiments, for instance, relative to the nature and cause of iron rusting are suggested, and the results obtained are supposed to enable the pupil to answer such questions as "Does iron rust in dry air?" "Does water *only* cause iron to rust?" "Is the rusting of iron a chemical or a physical change?" The correct answers, however,

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are supplied in the descriptive paragraphs which follow, and it is plain that the replies given by the pupil under such conditions cannot be unprejudiced.

The selection of practical exercises is excellent, and the course has stood the test of actual experience. The illustrations include portraits of such pioneers as Priestley, Lavoisier, Davy, and Faraday.

A curious error is the spelling of Avogadro's name throughout as Avagadro.

(2) The second volume under review belongs to the "University Tutorial Series," and is based on Dr. Bailey's earlier work, "The New Matriculation Chemistry." The authors aim at a combination of the heuristic and didactic methods of teaching, and practical exercises for the pupil are accordingly interwoven with the text.

The book begins with an introductory course in which "special care has been devoted to the treatment of the Laws of Constant and Multiple Proportions, Avogadro's Hypothesis, and the meaning and use of Chemical Formulæ and Equations." There is much, however, in the discussion of these topics that is open to criticism. Thus, for instance, Avogadro's hypothesis is described on p. 141 as a "law," the word molecule is used in different senses without any explanation, atomic weights are tabulated and used before the idea of "equivalents" is introduced, and hydrogen is taken as the standard of atomic weights. According to the preface, the book aims at providing a course of fairly detailed study in chemistry, and yet no information is given as to practical methods of deducing atomic weights from equivalents; there is, for instance, no reference to Dulong and Petit's law.

The choice of practical exercises to be performed by the student is not always wise. Dropping a piece of sodium about the size of a pea into water, and demonstrating the low ignition point of benzoline, are experiments which in the hands of beginners might have unpleasant consequences, while such exercises as the preparation of ethylene and the conversion of yellow phosphorus into the red variety are not suitable for the matriculation student.

J. C. P.

OUR BOOK SHELF.

Trattato di Chimica Inorganica generale e applicata all' Industria. By Prof. E. Molinari. Terza edizione. Pp. xvii+924. (Milano: U. Hoepli, 1911.) Price 16 lire.

WHEN the first edition of this work appeared in 1905 its many excellent and novel features were commended in the full review which was published in *NATURE* of February 29 of that year. That these qualities were widely appreciated is shown by the fact that a second edition was called for within a year, and a third edition is now being issued. The present edition contains a very large amount of new matter, above 200 pages having been added to the text, fifty-six of which belong to the general introductory section, and deal with such subjects as mass-action, equilibrium, dissociation, and the phase rule. That the revision of the special section has kept pace with the march of modern industrial development is shown by the very thorough alterations which have been made

in the text, owing to the introduction of new processes, for example, under such headings as the manufacture of liquid carbon dioxide, steel, cements, superphosphates, the fixation of atmospheric nitrogen, &c.

The revision here has been thorough, and many new illustrations, mainly photographs, have been added. The older statistical data, which formed so novel a feature of an elementary treatise of this kind, have been brought up to date. It is pleasing to note that the few misstatements pointed out in the review of the first edition have been rectified. A few misprints of names still occur, e.g. Rooseboom for Roozeboom (p. 870), "Lothian, Bell," (as two names) for Lothian Bell (p. 876), Gulber for Guldberg (p. 127), but such misprints are more or less inevitable in view of the very large number of proper names employed, and is not a serious blemish. The work is undoubtedly written by one with a full knowledge of his subject, and will prove useful to a large public, especially to chemical students, engineers, or others interested in the later developments of inorganic chemical industry; in it theory and practice are admirably blended. W. A. D.

Dizionario di Merceologia e di Chimica applicata. by Prof. V. Villavecchia. Terza edizione. Vol. i., A-M. Pp. xii+1558. (Milan: U. Hoepli, 1911.) Price 15 lire.

THE present volume is the third edition of a dictionary of commercial articles, produced in all the various branches of applied chemistry—in the widest sense of the term—ranging from such natural products as minerals and metals, fruits and seeds, oils and fats, through all the branches of applied chemistry upward to the most refined chemical, pharmaceutical, and alimentary preparations. Each article represents a concise monograph on the subject of which it treats. In addition to the Italian synonyms, the French, German, English, and Spanish equivalents are given. Each monograph details the origin, the description, and preparation for the market of the article; it describes the commercial qualities, characters, properties, composition, the adulterants frequently found therein, the most characteristic tests for purity, and the uses of each article. Then follow statistical data, information about market values, and, finally, data concerning specifically Italian conditions, such as import duties and imposts, and references to the Italian pharmacopœia.

The reviewer has selected at random a number of subjects with which he is specially familiar, and has found the information concise, trustworthy, and ably presented. This work must perforce interest the Italian student in the first instance. The fact that the present volume of 1558 pages, from Abelson (musk seeds) to Mussena (Massena), appears in its third, much enlarged edition, testifies to its usefulness to the Italian reader.

Annual and Biennial Garden Plants: Their Value and Uses, with Full Instructions for their Cultivation. By A. E. Speer. Pp. xx+256. (London: John Murray, 1911.) Price 7s. 6d. net.

THERE appears to be no lull in the demand for books on gardening if one may judge from the voluminous output of this class of article. It would seem scarcely possible nowadays for anyone not to be able to grow flowers, so clear are the directions and particulars given in numerous manuals. The book before us deals entirely with annual and biennial plants in the form of a glorified nurseryman catalogue. By describing it in this way, however, it is not sought to detract from the merits of the work, though it may be remarked in passing that the numerous illustrations, six of which are in colour, are so far inferior to

those in the catalogues of our leading seedsmen that they might have been omitted with advantage.

The few pages of introduction give with admirable conciseness the essentials of garden craft for the particular class of plants of which the book treats. The rest of the book is a descriptive catalogue, arranged in alphabetical order, of the various species and varieties of annual and biennial garden plants. The author is to be congratulated on having given in nearly all cases the country of origin and date or introduction of the various plants mentioned, though in this connection the fact that *Tropaeolum minus* was introduced from Peru in 1596 might have been recorded, as it is one of the earliest known introductions to this country from South America. He is also careful to give the natural order of each plant and synonyms, as well as the derivation of the generic name in every case, so that for these features alone Mr. Speer's book deserves a place on the shelf of every garden-lover's library.

Full details as to the procedure to be adopted in the sowing of seeds and subsequent treatment of the seedlings are given at the end of the account of each genus.

Paints for Steel Structures. By Houston Lowe. Fifth edition, revised. Pp. 115. (New York: John Wiley and Sons; London: Chapman and Hall, Ltd., 1910.) Price 4s. 6d. net.

THIS is a new edition of Mr. Lowe's book, and gives a popular description of the present-day knowledge and experience as to the painting of iron and steel structures. The best method of painting such structures has been for some time attracting the attention of chemists and others in the United States, where a large amount of experimental work has been done, and some very curious and interesting results have been arrived at. Mr. Lowe is familiar with these various experimental tests, and has brought the results together in a convenient and popular form in his little book. There are, of course, a great many interesting chemical problems lying behind the question of the painting and rusting of iron and steel structures, which cannot yet be considered as having been solved, and therefore much that can be said in a book of this kind is tentative. On the other hand, the experience gained by experimental tests, although sometimes difficult to explain scientifically, is of value to the practical man, and guides him as to what it is best to do.

The book, therefore, can be recommended to architects and engineers who have to deal with the painting of iron and steel structures, as they will get a great deal of information in a simple form which will assist them in drawing up specifications for such purposes. A. P. L.

Chemistry of Food and Nutrition. By Prof. H. C. Sherman. Pp. viii+355. (New York: The Macmillan Company; London: Macmillan and Co., Ltd., 1911.) Price 6s. 6d. net.

THIS is a useful book; it contains numerous data on the properties, composition, and calorific value of the principal articles of food, and an up-to-date description of the scientific principles on which a dietary is constructed, and how it can be adapted to the varying needs of the organism. The author has a clear way of putting his points, and has exercised much judiciousness in not overwhelming his readers with too many arguments on disputed points; he has carefully selected his authorities, and the quotations he cites are apt and sufficient. On the controversial subject of the amount of protein necessary for an adult in the day he carefully splits the difference between Voit and Chittenden, and places the amount at 75 grams. The book is well worth careful perusal. W. D. H.